

**STATE OF MINNESOTA**  
**ENVIRONMENTAL QUALITY BOARD**  
**ENVIRONMENTAL QUALITY BOARD**

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**In the Matter of Xcel Energy's  
Application to the Minnesota  
Environmental Quality Board for a  
Route Permit for a Buffalo Ridge –  
White 115 kV Transmission Line**

**FINDINGS OF FACT,  
CONCLUSIONS AND ORDER  
ISSUING A ROUTE PERMIT FOR  
CONSTRUCTION OF A 115 kV  
TRANSMISSION LINE AND A  
NEW YANKEE SUBSTATION**

**MEQB DOCKET NO.  
04-84-TR-XCEL**

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The above-captioned matter came before the Minnesota Environmental Quality Board (MEQB), on March 17, 2005, pursuant to an application by Northern States Power Company d/b/a Xcel Energy for a Route Permit for a new 115 kV transmission line from the Buffalo Ridge Substation to a new Brookings County Substation in South Dakota and for a new Yankee Substation in Lincoln County, Minnesota.

A public hearing was held on Thursday, February 3, 2005, at 2:00 and 7:00 p.m. at the Midwest Center for Wind Energy in Hendricks, Minnesota. Alan Mitchell of the MEQB staff served as the hearing examiner at the hearing. The hearing continued until all persons who desired to speak had an opportunity to do so. The record was kept open for the submission of written comments until February 18, 2005.

**STATEMENT OF ISSUE**

Should Xcel Energy be granted a Route Permit to construct a single circuit 115 kV transmission line from the Buffalo Ridge Substation in Lincoln County, Minnesota, to a new Brookings County Substation in South Dakota and a new Yankee Substation in Lincoln County, Minnesota, and to expand the Buffalo Ridge substation and install other associated facilities, and, if so, which route should be selected for the transmission line, which substation site should be chosen for the substation, and what conditions should be imposed?

Based upon all of the proceedings herein, the MEQB makes the following:

## **FINDINGS OF FACT**

### **The Applicant**

1. The applicant is Northern States Power Company, d/b/a Xcel Energy.

### **The Project**

2. The proposed project consists of the following components, which collectively are referred to as the “Project”.

- (a) A 115 kV transmission line and associated facilities connecting the Buffalo Ridge Substation in Lincoln County, Minnesota, to a new Brookings County Substation in Brookings County, South Dakota<sup>1</sup>;

- (b) An expansion of the Buffalo Ridge Substation, including two new 115 kV circuit breakers, one new 115 kV line termination and an upgrade to a three-position 115 kV ring bus;

- (c) A new Brookings County Substation, in Brookings County, South Dakota which will be connected to the existing White Substation with a short double circuit 345 kV line;

- (d) A new 115 kV Yankee Substation midway along the new Buffalo Ridge to Brookings County transmission line to be located either in Verdi or Drammen township on one of five sites designated as Sites 1, 2, 3, 4, 5;

- (e) A 1.9 mile reroute of the existing Lake Yankton-Pipestone 115 kV transmission line which will make it possible to remove a 1.4 mile segment of the line from the Minnesota Department of Natural Resources Hole-in-the Mountain Wildlife Management Area (HMWMA) and the Nature Conservancy’s Hole-in-the Mountain Prairie (HMP).

3. Xcel Energy will design and install single circuit 115 kV transmission line structures for a significant portion of the route. For some segments, Xcel Energy will install structures that are designed for a double circuit 115 kV configuration to support the reroute of the Lake Yankton-Pipestone 115 kV transmission line. Near the Yankee Substation site – one mile to the east and up to two miles to the north of the substation – Xcel Energy proposes to design the structures to be capable of handling multiple circuits

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<sup>1</sup> Xcel Energy originally stated in its application that it would connect at the Western Area Power Administration's White Substation. Xcel Energy now intends to build a new 345/115 kV Brookings County Substation near the White Substation and tie the new substation into the White Substation with a short 345 kV transmission line. Exhibits 3 and 18.

to avoid transmission line congestion with any new or existing wind feeder lines or additional 115 kV or higher voltage transmission lines that may tie into the Yankee Substation in the future. Along other segments of the line, Xcel Energy may also elect to design and install structures that are capable of handling a single-circuit or a double-circuit 34.5 kV wind feeder lines or other distribution lines.

4. The structures will vary in height from 80 to 95 feet depending on whether they will be capable of handling additional circuits.

5. The new line will be built using bundled 795-kcmil 26/7 (Drake) aluminum core steel supported (ACSS) conductor for the transmission line. The use of bundled of 795 ACSS conductor was approved by the Minnesota Public Utilities Commission (PUC) by order dated July 13, 2004. The use of bundled conductors was proposed because of the dramatic increase in wind generation interconnections requests due to continued development of the wind resource in the area. By using bundled conductors, rather than a single conductor, more megawatts of wind generation will be able to be interconnected into the transmission system.

### **Procedural History**

6. On July 14, 2004, Xcel Energy notified the MEQB that it intended to apply for a Route Permit under the Alternative Permitting Procedures set forth in the MEQB Rules, Minn. Rules parts 4400.2000 to 4400.2950. Exhibit 1.

7. On August 10, 2004, Xcel Energy applied to the MEQB for a Route Permit authorizing construction of a new 115 kV transmission line connecting the Buffalo Ridge Substation in Lincoln County, Minnesota, to the existing White Substation in Brookings County, South Dakota, construction of a new Yankee Substation in Lincoln County, and expansion of the Buffalo Ridge Substation in Lincoln County. Exhibits 2 and 3 (Application).

8. The MEQB Chair accepted the Application on August 19, 2004, and began the review process. Exhibit 4.

9. Xcel Energy published notice in the Lake Benton Valley Journal on August 25, 2004, and in The Ivanhoe Times on August 26, 2004, announcing that the Application had been filed with the MEQB and that a public meeting would be held on September 22, 2004, at 3:00 and 7:30 p.m. at the Midwest Center for Wind Energy in Hendricks, Minnesota. Exhibits 5, 7 and 8.

10. On August 25, 2004, Xcel Energy mailed notice of the filing of the permit application to those persons whose names appeared on the MEQB's general notification list, to local officials, and to affected property owners in compliance with Minn. Rules part 4400.1350, Subp. 2. Exhibit 6.

11. A public information meeting was held in Hendricks, Minnesota on September 22, 2004, in accordance with Minn. Rules part 4400.2500. The MEQB accepted public comments on the scope of the Environmental Assessment (EA) until

October 25, 2004. The MEQB received five comment letters which are contained in Appendix B of the EA.

12. On November 1, 2004, the MEQB Chair issued a Scoping Decision setting the scope of the Environment Assessment. Exhibit 10.

13. On November 8, 2004, the MEQB mailed the Scoping Decision to persons on the service list maintained by the Public Utilities Commission for the certificate of need proceeding, on the MEQB's general notification list, and on the Buffalo to White Project contact list and also to MEQB technical representatives. Exhibit 11.

13. On January 12, 2005, the MEQB mailed a Notice of Public Hearing and availability of Environmental Assessment to those persons on the general notification list and to local officials. Exhibits 12, 14 and 15. The notice was posted on the MEQB webpage on or about January 14, 2005.

14. On January 16, 2005, the MEQB issued its EA. Exhibit 13.

15. On January 17, 2005, the Notice of Public Hearing and availability of Environmental Assessment was published in the MEQB Monitor. Exhibit 9.

16. The Notice of Public Hearing and availability of Environmental Assessment was published in the Lake Benton Valley Journal on January 26, 2005, and in The Ivanhoe Times on January 27, 2005. Exhibits 24 and 25.

17. The EQB chair appointed Mr. Alan Mitchell of the MEQB staff to act as the hearing examiner and to conduct a public hearing.

18. A public hearing was held on February 3, 2005, in Hendricks, Minnesota. Mr. Larry Hartman and Mr. George Johnson attended on behalf of the MEQB Staff.

19. The hearing examiner announced at the hearing that the record would remain open for the submission of written comments until close of business on February 18, 2005.

### **Alternative Route Segment**

20. Only one alternative route segment was analyzed in the Environmental Assessment – identified as Route Segment J. Route Segment J would replace Segment E in Xcel Energy's preferred route.

21. Route Segment J is an eight mile segment that parallels 120<sup>th</sup> Street for four miles, then runs north along County State Aid Highway 1 for four miles. Approximately 86% of the land crossed along Segment J is agricultural land and the other 14% is grassland and residential property. Segment J would cross six different protected wetlands. See Exhibit 13 at 28 (the Environmental Assessment).

22. Route Segment J would require the clearing of more trees than would Segment E. There are nine houses within 300 feet of Segment J and three houses within 300 feet of Segment E. Other comparisons of the two route segments can be found in the Environmental Assessment. Exhibit 13 at Figures C1 to C5.

23. There are more impacts to landowners and the environment along Segment J than along Segment E.

### **Yankee Substation Sites**

24. Xcel Energy proposed five different sites for the new Yankee Substation – three in Drammen Township (sites 1, 2, and 3) and two in Verdi Township (sites 4 and 5). Sites 3, 4 and 5 are all located at the intersection of 160th Street and County Road 1. Sites 1 and 2 are about a mile or two to the north of the other sites. Each proposed site is approximately 40 acres in size. The five substation sites are shown in Appendix D of the Environmental Assessment (Exhibit 13).

25. The Yankee Substation will be designed to accommodate the Buffalo Ridge to Brookings County 115 kV line, up to four future high voltage transmission lines, and up to twelve 34.5 kV wind collector lines.

26. Xcel Energy has indicated that it can build the substation on any of the sites, but it has a slight preference for sites 3, 4, and 5 because these sites are further away from homes than sites 1 and 2 and because sites 3, 4, and 5 require less preparation for construction due to terrain. *See* Testimony of Pamela Rasmussen (Exhibit 18) at 6. Xcel Energy has requested that it be authorized to continue to negotiate the sale of the land with the landowners at sites 3, 4, and 5, but that the EQB designate one site for the substation in the event negotiations are not successful.

27. Residents of both Drammen Township and Verdi Township have stated that they would like the substation to be located in their township. *See also* the written comments that were submitted during scoping of the Environmental Assessment, included in Exhibit 13 at Appendices B.3. and B.4.

28. Site 3 is less acceptable than sites 4 and 5 because the landowner has sold the wind rights to another area resident who intends to construct wind turbines on that property. *See* submission from David Norgaard, Tyler, Minnesota, received by the EQB on March 8, 2005. Unless the landowner and developer agreed to sell the land to Xcel Energy, this site should be avoided.

29. Sites 4 and 5 are across Highway 1 from each other. The sites are essentially identical. Site 5 may result in slightly less congestion at the Highway 1/160<sup>th</sup> Street intersection since site 5 is on the east side of the highway closest to the new 115 kV route. In the interest of selecting one site, the EQB finds that site 5 is slightly better than site 4, although any of sites 3, 4, and 5 would be acceptable if the landowner agreed.

### **Buffalo Ridge Substation**

30. The Buffalo Ridge Substation is located southeast of the City of Lake Benton in section 22 of Lake Benton Township. The substation is owned and operated by Xcel Energy. Xcel Energy intends to expand the Buffalo Ridge Substation by grading and fencing in an area immediately north and east of the existing site on property owned by Xcel Energy. Xcel Energy intends to install two new circuit breakers and one new 115 kV termination and to upgrade a 115 kV bus.

31. No adverse environmental impacts are anticipated from expansion of the Buffalo Ridge Substation.

### **Route and Right-of-Way**

32. Except for approximately a 0.5 mile portion along 140<sup>th</sup> Street on Route Segment E, the entire route will follow existing road and transmission line rights-of-way. Xcel Energy has requested authorization to construct the transmission line along either side of the adjacent roadway where the line will parallel an existing roadway. On these segments of the line, there is no compelling reason to require one side of the road over the other and authorization to allow Xcel Energy to select the appropriate side of the road during final design is appropriate.

33. Xcel Energy has requested that the EQB authorize a route of 300 feet, 150 feet on each side of the centerline of the adjacent roadway. For the last 0.5 miles of Segment A, Xcel Energy has requested a route of 200 feet on either side of County Road 9 to accommodate an existing 34.5 kV double circuit wind feeder line that the new 115 kV line may parallel. Exhibit 18 at 5. It is appropriate to allow Xcel Energy to select the actual right-of-way within the defined route.

34. Xcel Energy will generally require a 45 foot right-of-way for the actual transmission line along the route selected. Along some segments, a 75 foot right-of-way is necessary where the line does not follow an existing roadway or parallels an existing feeder line. Exhibit 13 at 5.

35. In no location along the proposed route are there any significant environmental impediments to acquisition of a 45 foot or 75 foot right-of-way.

### **Discussion of Comments and Testimony**

36. Two sessions of the public hearing were held – one at 2:00 in the afternoon and one at 7:00 in the evening. At the afternoon session, approximately a dozen members of the public attended. At the evening session, two members of the public offered comments. All persons who desired to speak were afforded a full opportunity to make a statement on the record.

37. Xcel Energy was represented by Pamela Jo Rasmussen, Team Lead, Siting and Permitting at Xcel Energy, Grant Stevenson Project Manager for Xcel Energy, and

Richard Gonzalez, Principal Engineer, Excel Engineering, Inc. Ms. Rasmussen testified regarding Xcel Energy's preferred route and substation sites and environmental impacts. Exhibit 18. Mr. Stevenson testified regarding Xcel Energy's efforts to minimize potential interference of the new line with existing telecommunications lines. Mr. Gonzalez testified regarding the reliability limitation of building the new 115 kV line between the Yankee Substation and the Brookings County Substation using double circuit 115 kV structures. Exhibit 19.

38. Mr. Gonzalez testified that because of interest in further development of wind generation in the Buffalo Ridge area, Xcel Energy initiated a study called the "Buffalo Ridge Incremental Generational Outlet" study, for which he is the lead engineer. The purpose of the study is to explore how to increase transmission capacity from the Buffalo Ridge area after the presently planned improvements to handle 825 megawatts of wind power are completed. Mr. Gonzalez testified that the top candidates for further construction are a second Nobles County – Fenton 115 kV line and a second Yankee – Brookings County 115 kV line. Exhibit 19 at 3.

39. Among the most severe contingencies that limit additional generation outlet capability from Buffalo Ridge are the loss of the yet -to-be-routed Nobles County – Fenton 115 kV line and the loss of the new Yankee – Brookings County 115 kV which is the subject of this proceeding. Both of these new lines will provide 115 kV outlet paths to the 345 kV system. Outage of either line, or its associated 345/115 kV transformer (at the Nobles County Substation or the Brookings County Substation) presents two limitations: 1) overload of other transmission lines or transformers and 2) voltage collapse at Yankee or Fenton.

40. Mr. Gonzalez testified that if a second Yankee – Brookings County 115 kV circuit were installed on structures physically separate from the first circuit, the desired Yankee – Brookings County redundancy would be achieved, both voltage stability, and post-contingency overload issues would be effectively addressed, and outlet capability would be increased. If a second Yankee – Brookings County 115 kV circuit were installed on the same structures, both circuits would be subject to the same failures and consequently would be considered out at the same time under mandatory planning standards established by the North American Electric Reliability Council (NERC) and the Mid-Continent Area Power Pool (MAPP). Exhibit 19 at 7.

41. Mr. Gonzalez testified that he had examined the possibility of constructing a double-circuit 115 kV system between the new Yankee Substation and the new Brookings County Substation. He testified that a double-circuit system was not appropriate because it would not resolve voltage stability and overload issues because placing both circuits on the same structures would mean both circuits were subject to the same failures. Exhibit 19 at 7.

42. In response to questions, Mr. Gonzalez stated that he did not consider whether a double-circuit line could be built faster or cheaper than an entirely new line because a double-circuit was determined to be not feasible regardless of cost or construction time.

43. The issue of double-circuiting has been an area of interest in all three of Xcel Energy's recent transmission line project dockets in southwestern Minnesota. The issue of double-circuiting is a complex issue. While there may be environmental and land use advantages to double circuit structures, there are also disadvantages from a reliability perspective.

44. Minnesota Rules, part 4400.0300 states that: it is the purpose of the act (Power Plant Siting) and the policy of the state to locate high voltage transmission lines in an orderly manner compatible with environmental preservation and the efficient use of resources. In accordance with this policy, the board shall choose locations that minimize adverse human and environmental impact while ensuring continuing electric power system reliability and integrity and ensuring that electric energy needs are met and fulfilled in an orderly and timely fashion.

45. After Xcel Energy presented its testimony and answered questions, Mr. Dirk Shuland of the Western Area Power Administration and Ed Rowan, a consultant for WAPA, described the environmental review process that will be undertaken by WAPA arising from Xcel Energy's request to interconnect the new 115 kV line at the new Brookings Substation and a 345 kV line from the Brookings Substation to WAPA's White Substation in South Dakota. Mr. Shuland stated that WAPA was conducting an environmental assessment and would rely, in part, on the MEQB Staff's environmental analysis. Exhibits 20 and 21.

46. Some members of the public asked about the schedule for construction of the transmission line. Xcel Energy representatives confirmed that the Project is still scheduled for completion in Fall of 2007.

47. Interstate Telecommunications Cooperative, Inc. (ITC), which maintains telecommunication lines in the Lake Benton area, *see* Exhibit 22, had several representatives in attendance at the afternoon hearing. Jerry Heiberger, General Manager, and Todd Boyd, General Counsel, expressed concerns about harmonic interference ITC has experienced on its telecommunication lines in the Lake Benton area. Mr. Heiberger stated that ITC believed that the interference is being caused by the wind turbines or by the 34.5 kV feeder lines. Mr. Heiberger and Mr. Boyd traced their involvement with Xcel Energy over the past several years in an effort to resolve the alleged problems. *See* Exhibit 23. Mr. Boyd provided additional documentation of communication between ITC and Xcel Energy in his written submission dated February 16, 2005, which has been marked as Exhibit 26.

48. The ITC representatives also expressed concern that the new 115 kV transmission line might cause additional interference with the ITC system and stated that Xcel Energy has not contacted ITC in an effort to address the problem or evaluate the proposal for the new transmission line. Mr. Boyd requested that the EQB deny the route permit until these issues could be addressed and resolved. In his submission of February 16 (Exhibit 26), Mr. Boyd requested that certain language be included in any permit that



was issued, language requiring Xcel Energy to consult with ITC and estimate the level of interference and to comply with certain industry standards.

49. In his February 16 submittal, Mr. Boyd also attached a report prepared by ITC called "ITC Telecommunication Inductive Interference Report," a 2003 report prepared by a consultant for ITC. In the Report at page 84, the consultant concludes that the ITC telecommunication system in the Lake Benton area is impacted by inductive interference from nearby wind turbines and feeder lines and that owners of the feeder lines should determine whether the design of their collector system is in compliance with industry standards spelled out in Institute of Electrical and Electronic Engineers (IEEE) standards 519, 776, and 367.

50. It is not possible on this record to determine what is causing the interference with the ITC system or whether owners of the feeder lines are in compliance with industry standards. Nor is it possible to determine whether the new transmission line will interfere with the ITC system. However, Xcel Energy has pledged to work with ITC in selecting the location for the actual structures within the route approved by the EQB and to comply with any applicable standards. See letter from Lisa Agrimonti, dated February 18, 2005, marked as Exhibit 27. These would be reasonable conditions to include in any route permit that is issued.

51. The Department of Natural Resources also submitted a letter into the record. The letter is dated February 16, 2005, and is marked as Exhibit 28. The DNR letter indicated support for Xcel Energy's proposal to remove a 1.4 mile segment of the Lake Yankton-Pipestone 115 kV line from the Hole-in-the-Mountain Wildlife Management Area and the Nature Conservancy's Hole-in-the-Mountain Prairie.

52. Xcel Energy also submitted proposed findings for the EQB's consideration. Some of these findings have been incorporated into this document.

### **Applicable Statutory Conditions**

53. Minn. Stat. § 116C.57, subd. 4 provides as follows:

The board's site and route permit determinations must be guided by the state's goals to conserve resources, minimize environmental impacts, minimize human settlement and other land use conflicts, and ensure the state's electric energy security through efficient, cost-effective power supply and electric transmission infrastructure. To facilitate the study, research, evaluation and designation of sites and routes, the board shall be guided by, but not limited to, the following considerations:

(1) Evaluation of research and investigations relating to the effects on land, water and air resources of large electric power generating plants and high voltage transmission lines and the effects of water and air discharges and electric and magnetic fields resulting from such facilities on public health and welfare, vegetation, animals, materials and aesthetic values, including baseline studies, predictive modeling, and evaluation of

new or improved methods for minimizing adverse impacts of water and air discharges and other matters pertaining to the effects of power plants on the water and air environment;

(2) Environmental evaluation of sites and routes proposed for future development and expansion and their relationship to the land, water, air and human resources of the state;

(3) Evaluation of the effects of new electric power generation and transmission technologies and systems related to power plants designed to minimize adverse environmental effects;

(4) Evaluation of the potential for beneficial uses of waste energy from proposed large electric power generating plants;

(5) Analysis of the direct and indirect economic impact of proposed sites and routes including, but not limited to, productive agricultural land lost or impaired;

(6) Evaluation of adverse direct and indirect environmental effects that cannot be avoided should the proposed site and route be accepted;

(7) Evaluation of alternatives to the applicant's proposed site or route proposed pursuant to subdivisions 1 and 2;

(8) Evaluation of potential routes that would use or parallel existing railroad and highway rights-of-way;

(9) Evaluation of governmental survey lines and other natural division lines of agricultural land so as to minimize interference with agricultural operations;

(10) Evaluation of the future needs for additional high voltage transmission lines in the same general area as any proposed route, and the advisability of ordering the construction of structures capable of expansion in transmission capacity through multiple circuiting or design modifications;

(11) Evaluation of irreversible and irretrievable commitments of resources should the proposed site or route be approved; and

(12) When appropriate, consideration of problems raised by other state and federal agencies and local entities.

If the board's rules are substantially similar to existing regulations of a federal agency to which the utility in the state is subject, the federal regulations must be applied by the board.

No site or route shall be designated which violates state agency rules.

### **Applicable Rule Considerations**

54. Minn. Rules part 4400.3150 provides as follows:

In determining whether to issue a permit for a large electric power generating plant or a high voltage transmission line, the board shall consider the following:

- A. effects on human settlement, including, but not limited to, displacement, noise, aesthetics, cultural values, recreation, and public services;
- B. effects on public health and safety;
- C. effects on land-based economies, including, but not limited to, agriculture, forestry, tourism, and mining;
- D. effects on archaeological and historic resources;
- E. effects on the natural environment, including effects on air and water quality resources and flora and fauna;
- F. effects on rare and unique natural resources;
- G. application of design options that maximize energy efficiencies, mitigate adverse environmental effects, and could accommodate expansion of transmission or generating capacity;
- H. use or paralleling of existing rights-of-way, survey lines, natural division lines, and agricultural field boundaries;
- I. use of existing large electric power generating plant sites;
- J. use of existing transportation, pipeline, and electrical transmission systems or rights-of-way;
- K. electrical system reliability;
- L. costs of constructing, operating, and maintaining the facility which are dependent on design and route;
- M. adverse human and natural environmental effects which cannot be avoided; and
- N. irreversible and irretrievable commitments of resources.

## **Potential Impacts**

55. Construction of the new Yankee Substation, expansion of the Buffalo Ridge Substation and pole placement will impact agricultural land. Permanent impacts in Minnesota are estimated to be 13 acres for the entire Project (12 acres for the Yankee Substation, .7 acres for expansion of the Buffalo Ridge Substation; and .3 acres from pole placement).

56. Impacts will be minimized by paralleling existing road rights-of-way wherever possible. Xcel Energy will place structures five feet from the edge of the road rights-of-way and field margins to minimize farmland loss and to ensure access to land near poles. Xcel Energy also will compensate landowners for crop damages and soil compaction.

57. The transmission line primarily crosses land zoned for agricultural use. If Xcel Energy's preferred route is selected, there would be eight residences located within 300 feet. No residential homes or businesses will have to be displaced by the location of the line or the new Yankee Substation. The proposed Project will not have a significant impact on human settlement.

58. The proposed transmission line will be designed to meet or exceed all requirements of the National Electric Safety Code, which is the utility standard that applies to all transmission lines.

59. The Project will create only nominal corona or noise impacts and mitigative measures are not necessary.

60. There are numerous water pipelines in the Project area that could be impacted by construction of the Project. Xcel Energy has committed to work with the Lincoln-Pipestone Rural Water and Brookings-Duel Rural Water to avoid or mitigate any Project related impacts on rural water systems.

61. The aesthetic impacts created by the Project will not be significant. The new transmission line will be on single steel poles between 80 and 95 feet tall, approximately 400 to 600 feet apart and will contrast with the open agricultural areas. However, the Project will also enhance the aesthetic character of the HMWMA and HMP area by removing approximately 1.4 miles of the existing Lake Yankton – Pipestone 115 kV transmission line from the HMWMA. The Buffalo Ridge Substation expansion will not create substantial visual impacts. The new Yankee Substation will convert approximately five to 12 acres of farmland to a more industrial character.

62. Socioeconomic impacts will be primarily positive. The Project will create short-term construction expenditures in the area and increased tax revenue over the life of the Project.

63. No known or historical architectural resources were identified within one mile of the proposed Project. Five archeological site locations were identified within one mile of the proposed Project, but no impacts to these sites are anticipated.

64. The Department of Natural Resource's (DNR) Minnesota Natural Heritage Database identified 123 instances of threatened species, one instance of an endangered species and 29 areas of special concern within one mile of the proposed transmission line route, most of which are located in the HMWMA and HMP. Topeka Shiner, a federal-list endangered species, have been identified in area creeks and by the Minnesota Natural History Database as occurring within one mile of the proposed routes. The Project will span all creeks in the area and measures will be taken so there will be no impact to the Topeka Shiners. The DNR identified the eastern part of the Project area as within a "known concentration" of Blanding's Turtles. Potential impacts to the turtles will be minimized by pre-construction surveys of the construction area to identify any Blanding's Turtles, education of construction workers on the turtles and revegetation of turtle habitat areas with native grasses and forbs.

65. The issue of electric and magnetic field (EMF) exposure was discussed in the Environmental Assessment. Exhibit 13 at 45-53. There is at present insufficient evidence to demonstrate a cause and effect relationship between EMF exposure and adverse health effects. There are no state or federal health-based exposure standards. The Minnesota Department of Health recommends avoiding exposures about which there are questions of safety or health, at least to the extent that an activity can be avoided easily or cheaply. The Department has stated that it is prudent to continue to monitor research in this area.

66. According to Xcel Energy, the maximum calculated ground level magnetic field expected when the new line is conducting electricity under average operating conditions is approximately 87 milligauss directly below the line for the single pole davit arm, and 146 milligauss at peak operating conditions. The only two states that have established standards are Florida (a 150 milligauss limit) and New York State (a 200 milligauss limit). The maximum magnetic field expected from the new line is within those limits.

67. In previous route proceedings, the MEQB has included a permit condition in high voltage transmission line permits limiting electric field exposure to 8 kV per meter at one meter above ground. This permit condition was designed to prevent serious hazard from shocks when touching large objects, such as semi tractor trailers or large farm equipment under extra high voltage transmission lines of 500 kV or greater. The proposed line would be below this limit and would create a maximum electric field of approximately 0.87 kV per meter.

68. Impacts to air quality will be minimal and temporary.

69. The proposed route for the 115 kV transmission line will span eight wetlands identified by the National Wetlands Inventory, four of which are located in

Segment E. Temporary impacts may occur if wetlands need to be crossed during construction. Potential permanent impacts are possible along segments C and E. Xcel Energy will attempt to span these wetlands. If spanning is not possible, two poles, creating 120 square feet of permanent impacts, will be required.

70. Xcel Energy will minimize impacts to wetlands by scheduling construction during frozen ground conditions where possible, utilizing the shortest routes, assembling structures in upland areas and, where frozen ground construction is not possible, utilizing special construction mats to limit disturbance and compaction.

71. Flora in the majority of the Project area is typical of Minnesota agricultural land. The Project will be located along roads and agricultural lands that have been previously disturbed. Therefore, no impacts to native vegetation are expected.

72. There is minimal potential for the displacement or loss of habitat for wildlife. Most of the Project goes through cultivated lands that do not provide a habitat for fauna and the route segments do not go through any major prairie bird nesting areas and should not provide an opportunity for avian collisions. The HMWMA and the HMP, however, provide a large prairie remnant habitat. Butterflies in the HMWMA and HMP could be impacted by construction, but no post-installation impacts are anticipated. In the HMWMA and HMP, Xcel Energy will work with the DNR and Nature Conservancy representatives to minimize impacts during construction of the new line and removal of the existing 1.4 mile portion of the Lake Yankton – Pipestone 115 kV transmission line.

### **Costs**

73. Xcel Energy estimates that the transmission line, Buffalo Ridge Substation modifications and the new Yankee Substation will cost \$23,000,000. The new Brookings County Substation, which will be permitted in South Dakota, is not included in this cost estimate.

### **Environmental Assessment**

74. The Environmental Assessment addressed the issues identified in the Chair's Scoping Decision.

Based on the foregoing Findings of Fact, the Environmental Quality Board makes the following:

### **CONCLUSIONS**

1. Any of the foregoing Findings more properly designated as Conclusions are hereby adopted as such.

2. The Environmental Quality Board has jurisdiction over the subject matter of this proceeding pursuant to Minn. Stat. §116C.57, subdivision 2.

3. This project qualifies for review under the Alternative Review Process of Minn. Stat. §116.575 and Minn. Rules parts 4400.2000 to 4000.2950.

4. The Applicant and the MEQB have complied with all procedural requirements required by law.

5. The MEQB has completed an Environmental Assessment on this Project as required by Minn. Stat. §116C.575, subdivision 5 and Minn. Rules part 4400.2750, and considered all the pertinent factors in determining which route to approve.

6. The conditions included in the Route Permit are reasonable and appropriate.

Based on the Findings of Fact and Conclusions contained herein and the entire record of this proceeding, the Environmental Quality Board hereby makes the following:

### **ORDER**

A Route Permit is hereby issued to Xcel Energy for construction of a 115 kV transmission line and associated facilities along route segments A, B, C, D, E, and F in Minnesota, expansion of the Buffalo Ridge Substation, a new Yankee Substation at site 3, 4, or 5, and relocation of existing transmission line structures near the Buffalo Ridge Substation, and as necessary to tie the relocated Lake Yankton- Pipestone 115 transmission line back into the existing right-of-way and under the conditions specified in the permit. The Route Permit shall be issued in the form attached hereto, with a map showing the approved route and substation sites.

Dated this 17<sup>th</sup> day of March 2005

STATE OF MINNESOTA  
ENVIRONMENTAL QUALITY BOARD



Robert A. Schroeder  
Chair